ICAO SAFETY

DRONE ENABLE

ICAO'S UNMANNED AIRCRAFT SYSTEMS INDUSTRY SYMPOSIUM

ICAO HQ, Montréal, Canada | 22–23 September 2017

LESLIE CARY

RPAS PROGRAMME MANAGER

DRONE ENABLE

- Objective: Define a UAS traffic management (UTM) framework (to include effectiveness, safety, and efficiency) with core boundaries for global harmonization

Do it Different & Faster!

- A lot faster!
- And involve industry!
- From the beginning of the process…
- So we did.

Form a group!

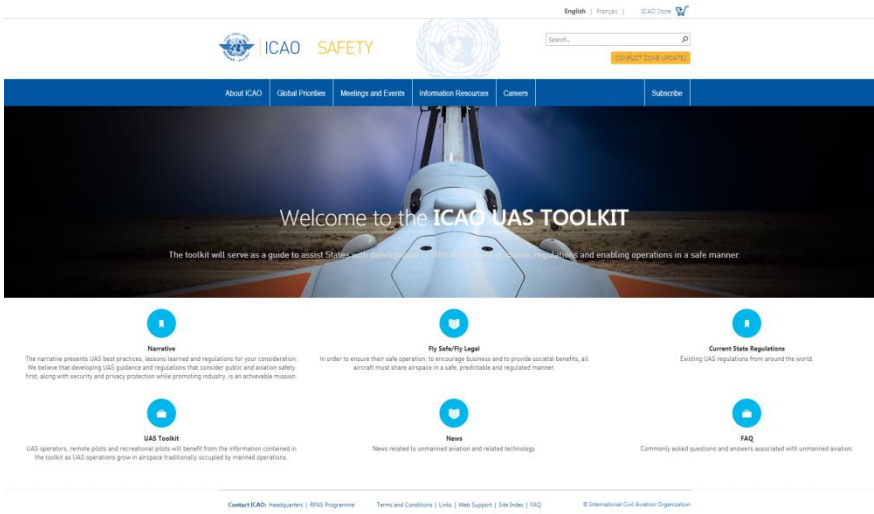
- **Unmanned Aircraft Systems Advisory Group (UAS-AG)**

- Established to assist the Secretariat to undertake tasks requested by HLSC, to provide UAS guidance and best practices to States, regulatory bodies and stakeholders

- Comprised of a multidisciplinary membership of UAS regulatory and operational personnel, ATM and related industry technical experts from geographically diverse member States, industry and international organizations

First, make a UAS Toolkit!

- ACTION: 6 months from formation - produced 1st deliverable
- ICAO UAS **Toolkit**
- Access to worldwide national regulations and best practices through convenient one-stop website



The RFI Process

- May 2017: Request for Information (RFI) calling for UTM solutions to establish a common global framework for, and core boundaries of UTM
- UTM serves as a ‘downsized’ automated air traffic management system for areas with high density UAS operations, including package delivery
- The global response was overwhelming! 76 RFI responses submitted from States, industry and stakeholders

The UAS-AG convened to find the top RFI submissions, which were selected to present their solutions at DRONE ENABLE on the following topics:

- ***A common UTM framework with core boundaries for global harmonization***

With fundamental UTM component streams:

- ***Registration, identification and tracking***
- ***Communications systems***
- ***Geofencing-like systems***

	A	B	C	D	E	F	G	H	I	J
1	UAS-AG II RFI Assessment (Member Name)									
2	**Does the Response Address?**	**RFI 1**	**RFI 2**	**RFI 3**	**RFI 4**	**RFI 5**	**RFI 6**	**RFI 7**	**RFI 8**	**RFI 9**
3	How well are the UTM registration and identification systems addressed?									
4	How well is effectiveness of UTM addressed?									
5	How well is safety of UTM addressed?									
6	How well is efficiency of UTM addressed?									
7	How well is communication/compatability between UTM and ATC addressed?									
8	How well is detect and avoid addressed?									
9	How well is geofencing addressed?									
10	***How well can the proposed framework be implemented by ALL nations?***									
11	How flexible is the approach?									
12	How well are infrastructure requirements addressed?									
13	Reliance on existing infrastructure?									
14	Is spectrum readily available to support the concept?									
15	How well is cybersecurity addressed?									
16	Are limiting factors addressed?									
17	What is the feasibily of the proposed UTM?									
18	How do you rate this paper overall?									
19										
20	***Scoring 0 means "not addressed", 1 = very little, 5 = exceptionally well***									
21										
22	**Amplifiers**									
23										
24	**DAA**	**Effectiveness**	**Safety**	**Efficiency**						
25	Ability to detect and warn of potential collisions	Deconfliction	Is the responsibility in the right place and realistic	ATM impact						
26	Deconfliction plan	Capacity	Is the deconfliction/separation plan realistic and achievable	Airspace use or restrictions						
27	ATM requirements/responsibility	Technology readiness	Layered and robustness	Ease of use by the operators						
28	Range	Availability to UAS	Participation requirements realistic and achievable	State to state transitions						
29	Separation provisions inherent in the system	Accessibility to ATM	Sufficient interface with manned aircraft or other UAS	Deconfliction plans						
30				Ability to amend/change flight path						
31	**Registration**	**Implementation**	**Communication**	Real time notification of advisories						
32	Ownership, maintenance and access to the database	Complexity	Ability/need to interact with manned aircraft and ATM							
33	Ability to ID UA and RPS (operator, remote pilot, location)	Time line	Equipment requirements							
34	Technology requirements and readiness	Cost	ATM and airspace requirements							
35	Range of ID	Participation	Technology requirements and readiness (i.e. VOIP, datacomms, etc.)							
36	State to State ID and/or data exchange		Signal strength							
37										
38	**State by State support requirements**	**Cyber**	**Infrastructure**							
39	**Flexibility**	Security	Geo-fencing updates							
40	Ability to handle real time changes in airspace use our restrictions	Accessibility	Equipage requirements							

RFI responses were evaluated based upon a series of 16 questions, each with multiple amplifiers including:

- How well is the effectiveness of UTM addressed?
- How well is communication/compatibility between UTM and ATC addressed?
- How well can the proposed framework be implemented by ALL States?

DRONE ENABLE, ICAO's UAS Industry Symposium, represents the first time that States and industry have come together to present their ground breaking proposals for safe and efficient UTM on a global scale:

UTM Global Harmonization

OUTCOME : The UAS-AG will convene after DRONE ENABLE to create a UTM global harmonization document to be presented at the Second Global Air Navigation Industry Symposium (GANIS/2) 11-13 December 2017

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THANK YOU